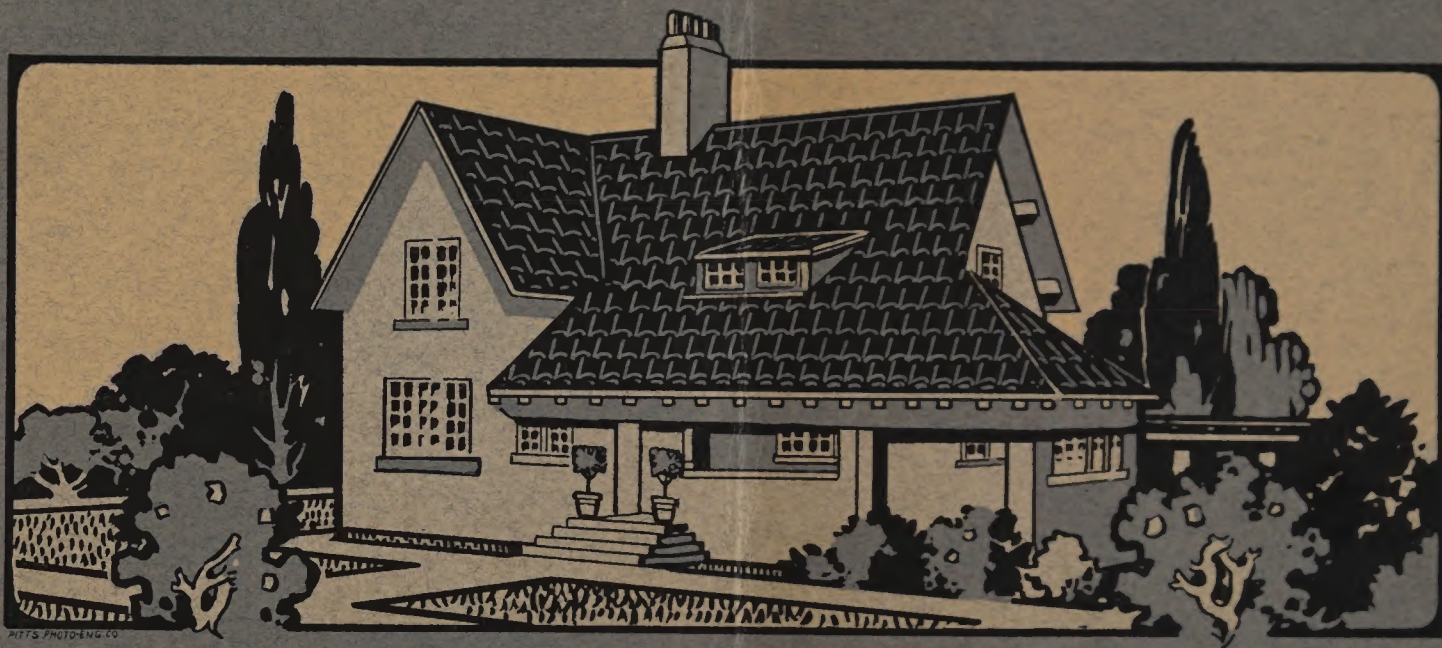


PLANS FOR
CONCRETE HOUSES



PITTS PHOTO-ENG. CO.

ADDRESS ALL BUSINESS COMMUNICATIONS TO THE COMPANY.

RECEIVED BY MAIL PITTSBURGH, PA.

BLAW STEEL CONSTRUCTION CO.

(PATENTED)
STEEL FORMS FOR CONCRETE
CONSTRUCTION

STRUCTURAL STEEL WORK
TRANSMISSION TOWERS

CABLE ADDRESS,
BLAWCO PITTSBURGH,
CODES,
A B C. WESTERN UNION,
LIEBERS.

GENERAL OFFICES PITTSBURGH, PA.

WORKS AND WAREHOUSES,
HOBOKEN, PA.
BRANCH OFFICES,
NEW YORK, CHICAGO.

165 BROADWAY,

NEW YORK

April 4, 1916.

SALES DEPARTMENT

Mr. W. F. Terry,
West Somerville, Mass.

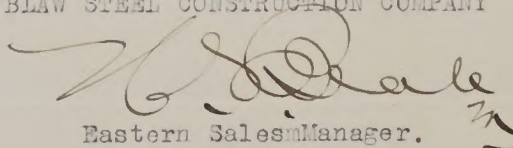
Dear Sir:--

We have your postal of the 3rd inst.,
and are mailing you under another cover, copy of
our bulletin #66, covering steel forms for wall con-
struction, #63, for floor forms and Book of Plans for
concrete houses, all of which we trust you will find
of interest.

If there is any further information
that you desire in connection with our steel forms, we
will be very glad to send it to you on receipt of
your further advices.

Very truly yours,

BLAW STEEL CONSTRUCTION COMPANY


Eastern Sales Manager.

HSB:RM.
63-66-Book

Blaw Steel Construction Company

Designers and Builders of
STEEL FORMS FOR CONCRETE CONSTRUCTION

GENERAL OFFICES:

Westinghouse Building, Pittsburgh, Pa.

New York Office, - 165 Broadway

Chicago Office, - 917 Ashland Block

WORKS:

Reynoldsville, Pa. - Pittsburgh, Pa.

Eastern Storage Yard, - Nepperhan, N. Y.

STEEL FORMS FOR EVERY KIND OF CONCRETE CONSTRUCTION



B

PLANS FOR
SMALL HOUSES
OF
POURED CONCRETE

as submitted in a Competition for Prizes given by

THE BLAW STEEL CONSTRUCTION CO.
WESTINGHOUSE BUILDING, PITTSBURGH, PA.





THE PLANS herein published were received in response to the following announcement :

THE BLAW STEEL CENTERING COMPANY, Westinghouse Building, Pittsburgh, Pa., offers prizes for the best plans and specifications for small concrete residences, as follows:

\$100.00 for the best set of plans
75.00 for the next best set of plans
50.00 for the next best set of plans
25.00 each for the next best three sets of plans

Designs must be in our hands by May the 15th, 1912. We will select the ten which, in our opinion, possess the greatest merit and submit them to Professor A. D. F. Hamlin, of Columbia University, for final selection of the most meritorious.

The competition is open for everybody.

Awards will be made on the basis of merit, it being our desire to have presented for the consideration of owners suggestive designs that will give the greatest value for the expenditure, and also new ideas that will tend to stimulate the construction of poured concrete houses. It is immaterial in this contest whether the value is secured by utility, beauty, novelty, fireproof qualities, or by combinations of these.

Following the award of the prizes, the plans of the successful contestants, with names and addresses of the designers, will be published in a booklet, which will be given wide circulation among prospective builders to encourage the construction of concrete houses.

CONDITIONS GOVERNING THE COMPETITION.

Foundations and outside walls *must be of poured concrete*, reinforced where necessary. Floors, ceilings, partitions, roofs, porches and stairways *may be of concrete or of any other material*, as the judgment of the designer may determine.

While the house may be of any design, suitable for any location, whether on level or sloping ground, and adapted to any climate, and

while such matters as furring and determining the number of stories are left entirely to the designer, the total cost of the house, ready for occupancy, must not exceed \$3,000.00.

The drawings required are plans of each story at a scale of one-eighth of an inch to the foot. The first story plan should show the lay-out of the grounds immediately adjoining, but need not show the entire lot. There is also required a perspective; the extreme right or left corner of the house is to be in the picture plane and to be drawn to the scale of one-eighth of an inch to the foot.

These drawings are to be arranged on one sheet of paper not exceeding twenty-two inches by thirty-one inches in size and mounted on stiff cardboard. The form of their presentation is to be left to the judgment of the individual competitors, but they are to be rendered in black and white.

Specifications must accompany the drawings. They must briefly describe the method of construction adopted for partitions, floors, stairs and roof; the method of placing doors and window frames, flues and pipes; the heating, lighting and plumbing systems; and the exterior and interior finish.

The contestants must enclose with plans and specifications a detailed estimate of cost, in which the following specified unit costs shall be assumed for the concrete work:—

Reinforcing steel in place, per pound,	\$.03
Concrete in place, exclusive of Forms, per cubic foot,	.20
Form cost, where Blaw Steel Forms are used, per square foot,	.01½
Form cost, where Wooden Forms are used, per square foot,	.15

Estimates on other parts of the work must specify the locality where the prices will be found to apply.

No signature or other mark tending to reveal the authorship of the design is to be placed upon drawings, specifications or estimates, which are to be mailed to Blaw Steel Centering Company, Westinghouse Building, Pittsburgh, Pa., under one cover. A plain white envelope containing the name and address of contestant shall likewise be enclosed.

The design and the envelope will be given the same number upon receipt, and the envelope will not be opened until after award is made.



ON THE following pages we are reproducing drawings of the six prize winners and seventeen others which offer interesting suggestions to prospective builders. In response to the announcement on the left hand page a great number of plans were received. Thirteen sets of these plans were submitted to Professor A. D. F. Hamlin, of Columbia University, who selected the six best plans.

Specifications accompanying the various plans are not reproduced. Instead of reproducing these specifications we have indicated in the brief outlines on pages 20, 21 and 22 the principal points which ought to be given special attention in preparing specifications for concrete houses.

We wish to acknowledge our thanks to Professor A. D. F. Hamlin for his thorough examination of the plans submitted to him. The reasons assigned for his selection of the winners appear to us convincing.

BLAW STEEL CONSTRUCTION COMPANY

PITTSBURGH, PA.

AWARDED
FIRST PRIZE

Design "E," submitted by
E. Parmiter, Room 202,
25 West Forty-second St.,
New York City.

Exterior walls and foundations of concrete. Exterior plastered with cement plaster. Wooden floors, stud partitions, shingle roof, stained. House heated by hot air and wired for electric lights. Prof. Hamlin comments:

"The best of all the plans from the point of view of simplicity, spaciousness and general convenience. Adequate entrance lobby; living room admirable, $13\frac{1}{2}' \times 21\frac{1}{2}'$; dining room fair, $12' \times 12'$; kitchen excellent, $12' \times 12'$; pantry; three bed rooms, $13\frac{1}{2}' \times 14\frac{1}{2}'$, $12' \times 12'$, $10\frac{1}{2}' \times 12'$, each with closets; bath room $8' \times 5\frac{1}{2}'$; all have good head room; all rooms well lighted; good porch. Plan of second story superposes well on first, one chimney stack. Exterior simple and attractive, good lines and masses, simple roof. Plan of grounds shows admirable taste. Entire design shows artistic skill and taste. Cubic contents, exclusive of porch, 15,773 feet from cellar floor to middle of height of gable roof; porches, 2,480 cubic feet."

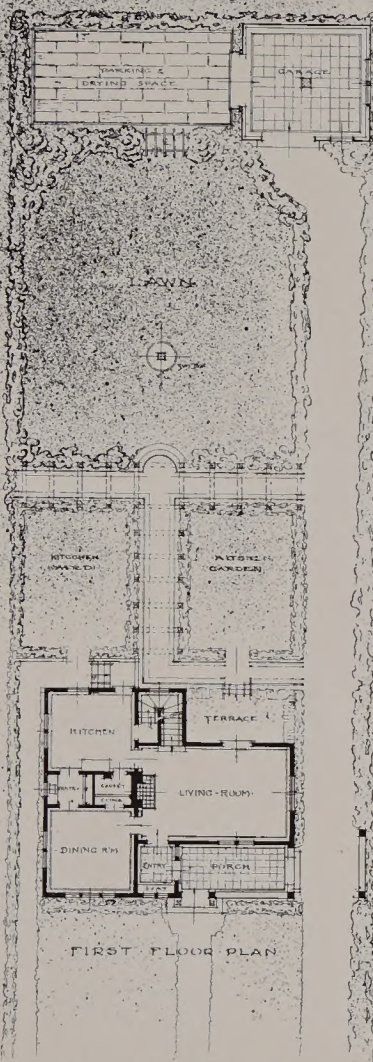
Could be built for \$3,000.



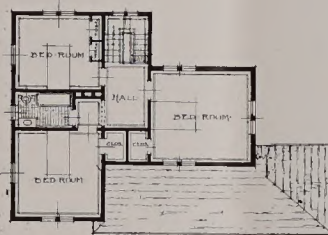
A SMALL SUBURBAN HOME

— TO COST THREE THOUSAND DOLLARS —

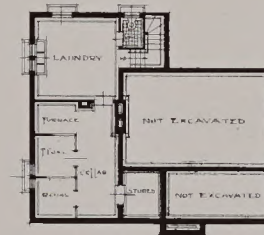
SCALE 8 FT. = 1 INCH



FIRST FLOOR PLAN



SECOND FLOOR PLAN



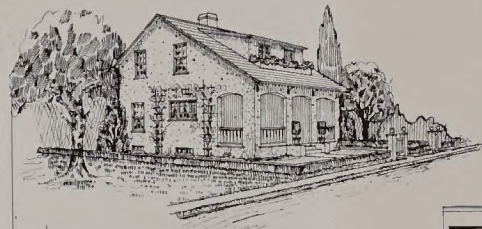
BASEMENT PLAN



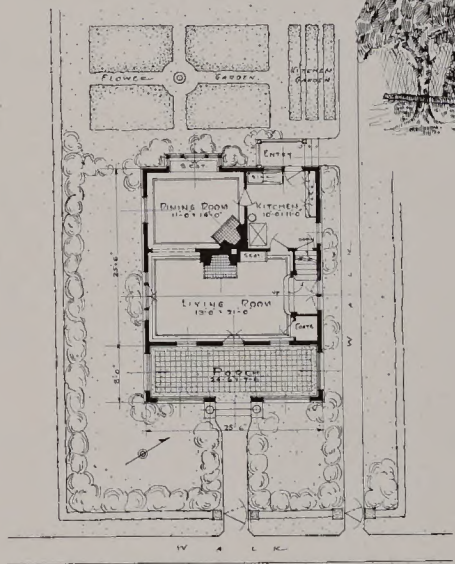
'SECTIONAL VIEW'



'SIDE ELEVATION'



'PERSPECTIVE'



'FIRST FLOOR PLAN'



'SECOND FLOOR PLAN'

'COMPETITION'
'FOR A'
'CONCRETE HOUSE'
'TO COST'
'THREE THOUSAND DOLLARS.'

SCALE OF DRAWINGS
0 10 20 30

AWARDED SECOND PRIZE

Design submitted by William C. Lurkey, 144 Winslow Avenue, Buffalo, N. Y.

"Outer walls and porch posts to be of monolithic concrete construction. Cellar and porch floors to be concrete. Porch floor to be marked off into 8" x 8" squares as shown on plan. Outer concrete walls to be 6" thick, reinforced with 3/4" vertical and horizontal rods 18" apart, furred on inside with wood furring strips and plastered. Cellar under kitchen, dining and living rooms. Walls to be 12" thick.

"All first floor partitions 3" thick of concrete, and plastered.

"All inside partitions on second floor to be 2" x 4" studs 20" o. c. lathed and plastered.

"Floor joists 2" x 10"—16"

—o. c.

"Roof rafters 2" x 6"—20"

—o. c.

"Floors to be oak in living and dining rooms; balance hard pine.

"All inside trim cypress stained an oak color.

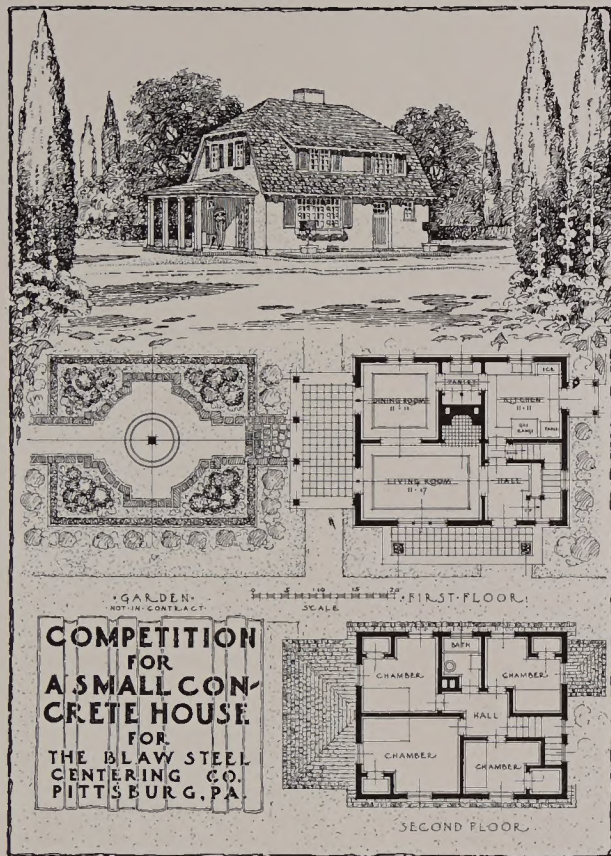
"Window frames built into walls with a 2" reveal on outside and flush on inside; all exterior trim to be cypress stained a dark brown color; sash of white pine painted. Chimney to be lined with flue tile built into concrete. Soil and vent pipes built into walls.

"Roof shingled with red asbestos cement shingles.

"Living room and dining room to be rough floated plaster tinted; balance of rooms hard plaster, white finish; all doors, sash and trim to be of stock pattern."

Hot air furnace and laundry tubs in cellar.

Could be built for \$3,000.



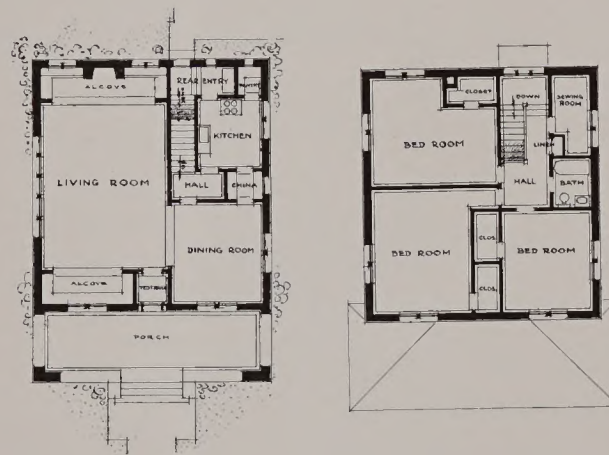
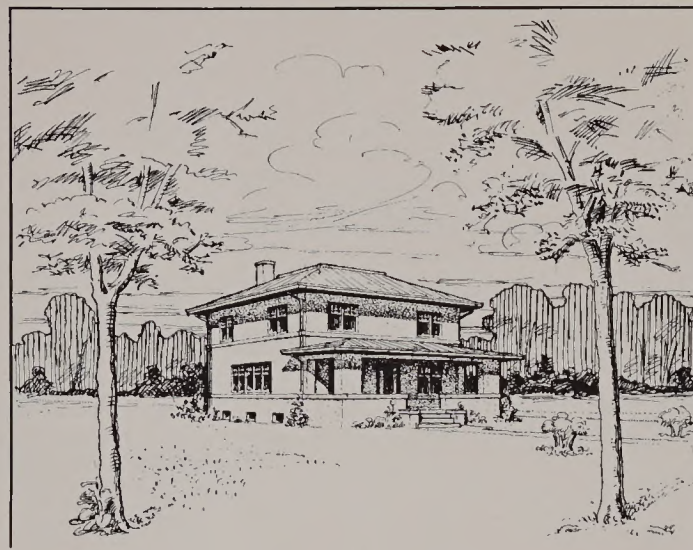
AWARDED THIRD PRIZE.

Design submitted by Jack Lehti, 4th and T Sts., N. E., Washington, D. C.

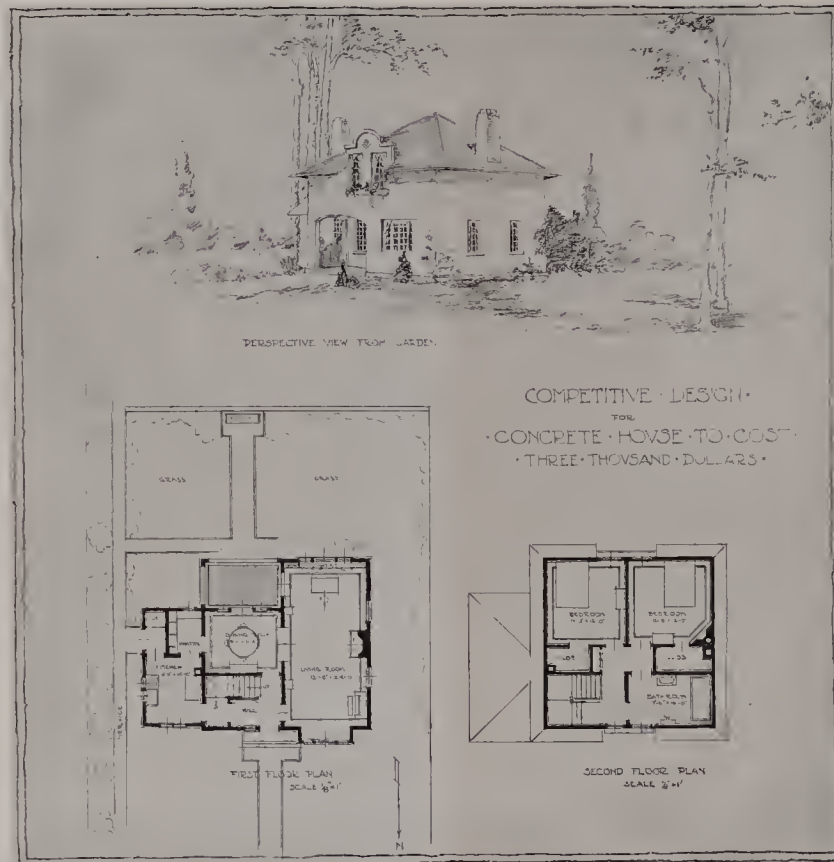
"The exterior walls, foundations, footings, chimney and basement floor shall be of concrete. The first and second floors shall be of wooden construction. All partitions shall be of stud, lath and plaster. The roof shall be of wooden construction, with shingle roofing left in its natural condition. All flashing shall be copper. Finished floors generally shall be wood, with exception of bath room, which shall be tile. All exterior trim shall be painted white. Shutters shall be painted a dark green. Interior trim shall be specified. Plumbing, heating and lighting shall be installed and connected according to prevailing regulations. Steel reinforcing rods shall be provided for all openings to act as lintels. All exterior steps shall be of brick, and floors to same shall be tile laid on a bed of cinder concrete."

Contents, 14,720 cubic feet. Porch, 1,413 cubic feet.

Could be built for \$2,800.



Design submitted by Hugo Logemann, Green Bay, Wisconsin.



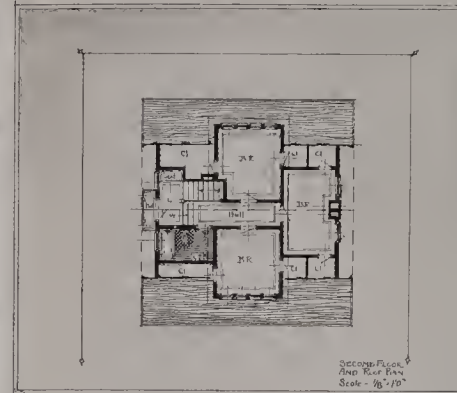
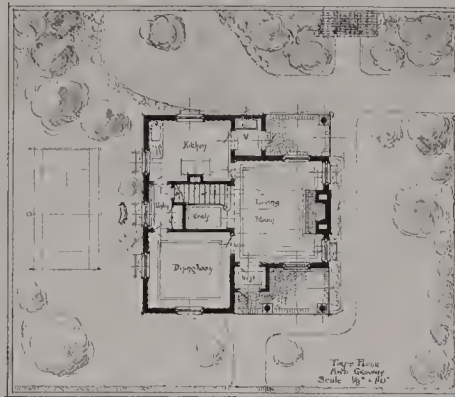
Design submitted by
 F. W. Kervick,
 706 Cottage Grove Avenue, South Bend, Ind.



Design submitted by Norman B. Baker, 1516 Jacob Street, Troy, N. Y.

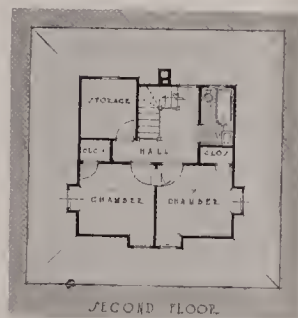


Design submitted by Ernest C. Redstone, 1157 Forest Avenue, New York City.

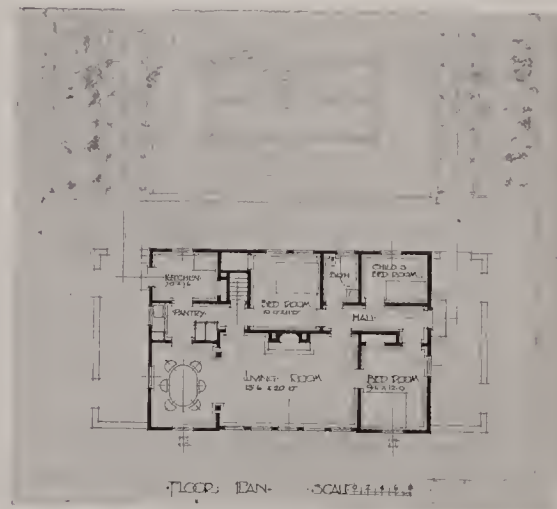


AWARDED FOURTH PRIZE.

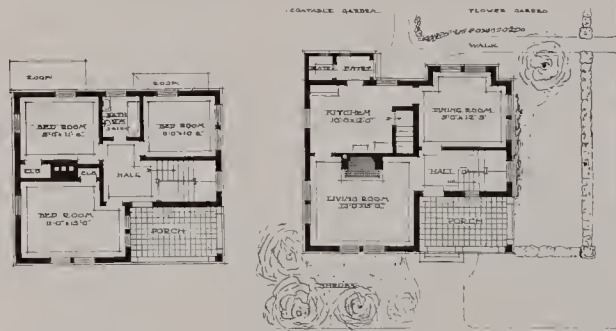
Design submitted by Grover Lippert, 418 W. Doty Street, Madison, Wis.



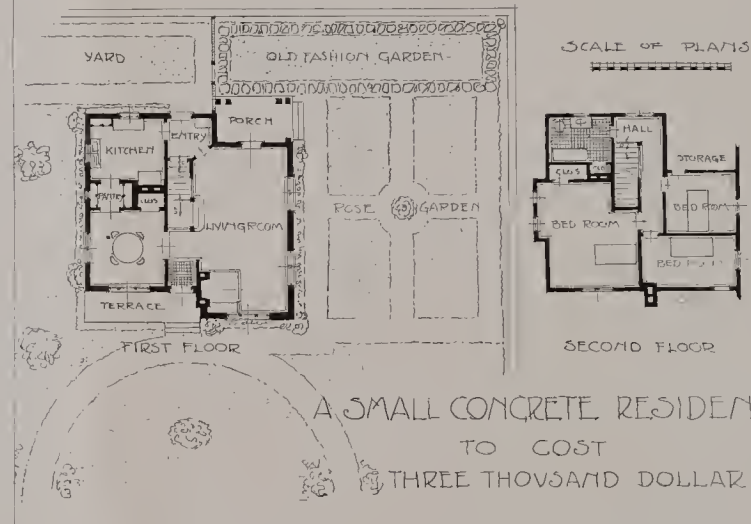
Design submitted by Charles E. Anderson, 25 News-Press Building, Poughkeepsie, N. Y.



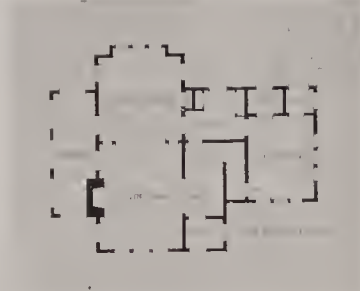
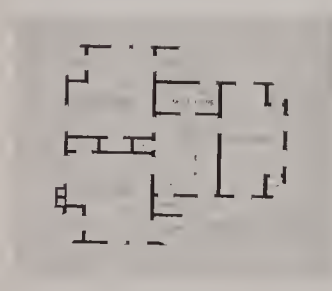
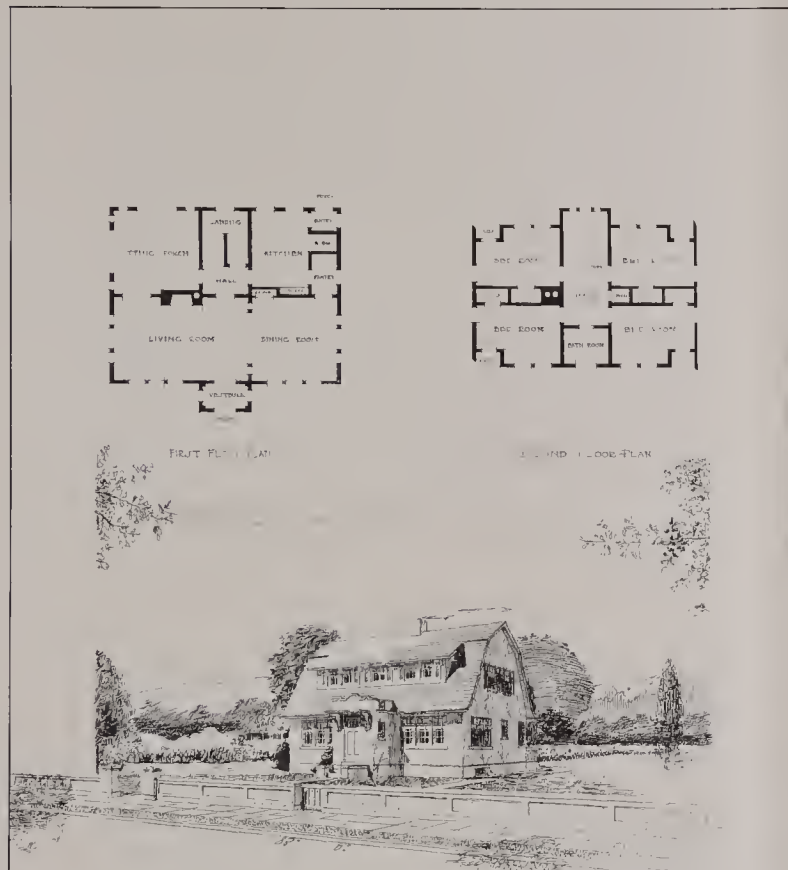
Design submitted by
Ernest E. Weihe,
1102 Fulton Street, San Francisco, Cal.



Design submitted by
J. Raymond Atkinson and Henry G. Schaefer,
2122 Sedgely Ave.,
Philadelphia, Pa.



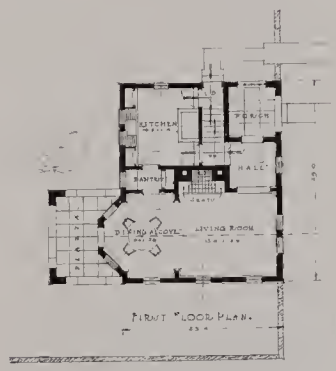
Design submitted by Edwin B. Vollmer, Tiffany Studios, 45th St. and Madison Ave., New York.



Designs submitted by Ernest W. Austin, 55 Church St., New Haven, Conn.



SECOND FLOOR PLAN.



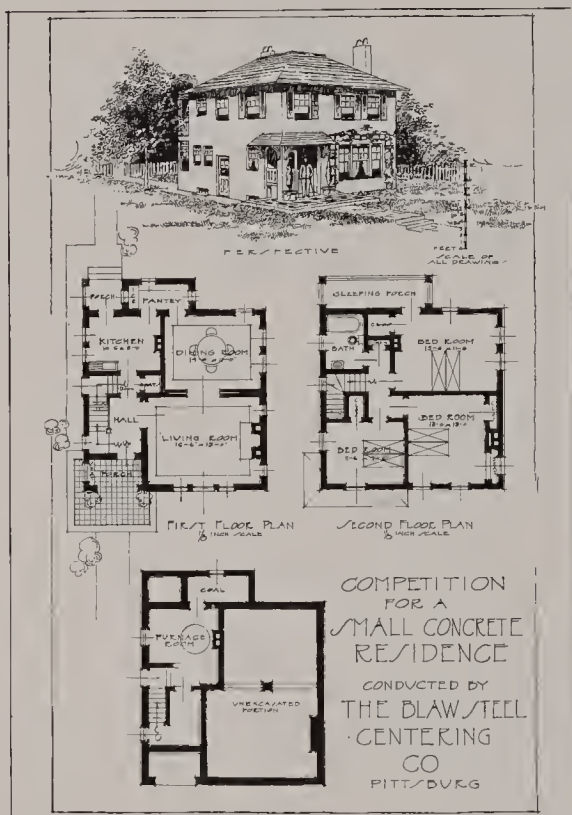
FIRST FLOOR PLAN.



Design submitted by Norman Baird Baker, 1516 Jacob St., Troy, N. Y.

Design submitted by R. I. Vaughn, 306 T St., N. W., Washington, D. C.

Design submitted by
John T. Gillig,
1905 G St., N. W.,
Washington, D. C.



Design submitted by
Edward G. Stahr,
16 Reese St.,
Buffalo, N. Y.



Design submitted by
M. G. Kingsley,
Feeding Hills, Mass.





DESIGN FOR A POWER CONCRETE HOUSE
TO COST UNDER THIRTY-THREE THOUSAND DOLLARS. SUBMITTED BY

EVERETT H. CRABB

AWARDED FOURTH PRIZE.

Design by Everett H. Crabb,
904 State Life Building, Indianapolis, Ind.

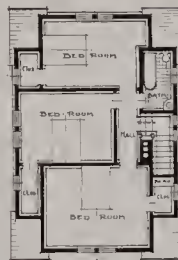
DOWN



FIRST FLOOR PLAN



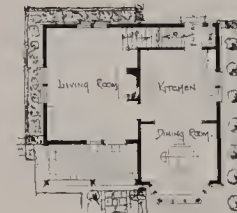
A SMALL SUBURBAN HOME



SECOND FLOOR PLAN



BASEMENT PLAN



Design submitted by
W. Stuart Pavey,
527 Fifth Ave.,
New York.

Design submitted by E. Parmiter, Room 202, 25 W. 42nd St., New York City, who won first prize with another design.

Suggestions for Specifications for a House with Poured Concrete Outer Walls

THE ADVANTAGES of the house with poured concrete outer walls, as compared with the frame, brick, stucco or cement block house, are evident. The house with poured concrete outer walls is stronger, warmer in winter, cooler in summer, more durable, and safer from damage by weather and fire.

Concrete Masonry. All foundations, exterior walls, basement floors and first floor porches shall be of concrete mixed in approved proportions of Portland cement, sand and gravel, or crushed stone. The mixture should be equivalent in density and cement contents to that of concrete made of one bag ($\frac{1}{4}$ barrel) of cement, $2\frac{1}{2}$ cubic feet of clean sand and 5 cubic feet of washed gravel, as these materials are ordinarily furnished for such work where the gravel and sand are obtained by dredging. This is not to exclude the use of bank gravel or run-of-bar gravel, provided the proportions are properly adjusted by adding screened gravel to obtain a mixture equal to that specified. Crushed stone of suitable fineness and quality may be substituted for screened gravel. The mixture requires about a barrel and a quarter of cement to the cubic yard of concrete.

Thickness of Walls. Building laws applying to each locality must be followed. These are often inconsistent with one another, and usually are based upon former or existing laws drawn with reference to brick or stone masonry. Where laws do not require greater thickness the following will be found ample :

Footings 18 inches thick (in firm soil).

Foundations 12 inches thick (in cellars 8 feet deep in cut).

Foundations 6 to 9 inches thick (in shallow cellars and raised cottages).

Superstructure 6 inches thick (one or two stories).

These thicknesses may be increased if desired. Increasing the thickness of the outside walls results in more uniform temperature within the house, especially where there is to be no furring on the inside. Walls of barns, garages and outbuildings may be made four inches, or even three inches, thick, if desired, with satisfactory results.

Forms. Blaw Steel House Forms to be used (for details see Blaw Bulletins).

Reinforcement. To care for tensile strains and temperature variations, reinforcement should consist of suitable steel rods placed over door and window openings, and of steel rods $\frac{1}{4}$ inch in diameter placed vertically and horizontally in walls at intervals of two feet or less.

Surface Finish. Trowel finish by a competent finisher should be applied to all cement floors, porches and other surfaces where called for on plans. This finish may be applied to walls also if desired. It leaves a smooth, hard surface.

Pointing up with cement mortar mixed in proportions of one of cement to $2\frac{1}{2}$ of sand is required for the ends of all slots left by spacers. This must be done within half a day of the removal of the spacers, while the wall is still very moist. Any blemishes in the surface of the wall that may occur owing to faulty spading, mixing or placing of concrete must be remedied when forms are removed and the wall left in smooth, presentable condition.

Roughening of the exterior surface of the walls, if desired, may be done in several ways. The easiest to apply are: *Rubbing with carborundum brick*, which may be done at any time, even when the wall is old, but is easier on a green wall; and *scrubbing with a stiff brush*, which requires more judgment, as it must be done immediately after forms are removed. *Washing with diluted muriatic acid* may be done in such a way as to remove the skin coat of cement; and *bush hammering* gives something like a natural stone hammered surface. All roughening of walls is unnecessary in most low-priced houses, but may be applied as embellishment to large surfaces or panels.

Stucco, Slap Dash and Pebble Dash finishes may be applied if desired. These, too, add to the expense and serve no useful purpose. Their value as ornamentation on poured concrete is questionable.

Painting exterior of concrete walls may be done with satisfactory results. Color may be added in this way. The usual purpose of such paint, however, is waterproofing. Proper painting of concrete walls keeps them dry, and is desirable on this account on outside walls that are not to be furred on the inside. Painting is not necessary if the inside walls are furred, but it may be desirable. Paint for concrete is not the same as for woodwork. Suitable paint must be procured.

Plastering may be applied direct to the interior surface of concrete walls if the exterior is suitably painted, otherwise the walls should first be furred. When applied direct to concrete a very thin coat of white plaster is all that need be used.

Furring may be applied to avoid dampness, or to secure additional warmth. Tile may be used for this, or lath may be applied to wooden nailing strips. Furring adds considerably to the cost of a house, and is often omitted in the less expensive houses. Whether or not to apply furring is largely to be determined by considerations of climate.

Chimneys should be of concrete, enclosing clay flue linings.

Window Frames should fit between wall form panels and be concreted in place.

Joists are built into the concrete as the walls are poured.

Partitions, floors, ceilings, stairs, interior trim, roof, heating, lighting and plumbing systems may be specified as in any frame or brick house, as the owner may prefer.

Suggestions for Specifications for a House with Poured Concrete Outer Walls, Partitions and Floors.

Such a house is itself non-burnable, and as nearly complete a protection for its contents against fire as has been developed. It is also very strong, durable, warm in winter and cool in summer, requires little or no repairs, and suffers no deterioration due to decay. It is also practically vermin proof.

The preceding specifications should apply to this work, supplemented as follows:

Concrete Masonry. All foundations, walks, floors, stairways and roofs should be of concrete, reinforced where necessary for tensile strains.

Thickness of Floors, and dimensions of beams and girders, shall be in accordance with the building laws of the nearest important city, but no floors shall be less than four inches thick. Room partitions shall be not less than four inches thick. Closet partitions may be three inches thick.

Reinforcement of Floors, Beams and Walls shall be figured according to approved building regulations. In general, floor reinforcement shall run both ways, each supporting wall and partition being considered as an unyielding support and additional supports in the form of reinforced concrete beams being provided in the larger rooms where necessary or economical. Each floor shall constitute one continuous slab, bonded by reinforcing steel into each wall and each partition.

Interior Painting. All concrete floors, except in basement, shall be painted with suitable concrete paint, unless wooden floors are to be applied above the concrete. Interior walls may all be similarly treated, in which case no plastering whatever will be required. Such treatment may be applied throughout, or to certain parts of the house, such as bath room, kitchen, laundry, etc.

Plastering may be applied to all inside walls, preparing them for papering, if desired. Only a very thin white coat is desirable.

Hot Air Ducts, Ventilating Pipes, Gas Pipes, and other conduits must be provided for in arranging the partitions. Usually they may be encased in the concrete partition walls, or run in closets specially provided for them.

Metal Trim may be used in place of wooden trim for all window and door frames, etc., if desired, but wooden trim may also be used fastened to inserts in the concrete.

Wooden Floors may be placed on top of concrete floors, fastened to wooden nailing strips, which may be secured to the concrete by bolts and inserts.

Why use Steel Forms to build Houses?

Reinforced concrete buildings are the most fireproof, the most enduring, the strongest of structures. Foundations, walls, floors and roofs, or as many of them as desired, may be cast as one stone, so as to be snug, warm and vermin proof, tensile stresses being cared for by the steel reinforcing.

Reinforced concrete houses must not be confused with structures of concrete blocks, or of stucco, to which they are much superior. Block houses are not monolithic, and cannot be truly reinforced; and the blocks are very much more porous than cast concrete. This is true of blocks molded in place on the wall, as well as of those cast in a factory. Stucco houses are plastered with a mixture of cement, lime and sand, lime being a material not used in true concrete. Plaster containing lime will not permanently protect metal against corrosion. The plaster used in stucco must be supported by lath, and some form of studding, which may be destroyed by fire.

The materials permanently entering into a reinforced concrete house cost less than those in a good brick house; but a concrete house has to be cast in a mold, which must be furnished, erected and taken down, but which does not enter permanently into the building.

Molds, or forms, for this kind of work, when constructed of wood, cost from eight cents per square foot of wall surface, for the simplest kind of foundations, to more than 20 cents per square foot, for columns, beams and girders. The lumber used in wooden forms is cut to fit each time it is erected, and consequently can be used only a few times. Therefore, if a concrete house is poured into wooden forms, the first cost will exceed the first cost of a frame house by quite a considerable sum.

Our molds, or forms, made of steel, are practically indestructible, and retain their shape indefinitely. Their erection is so simple a matter that they can be set up and taken down for one fifth the labor expended in erecting and taking down wooden forms; and they guarantee far better work, as they produce straight walls automatically. Thus it is readily seen that poured concrete houses can be built economically only by those who provide themselves with the proper equipment. Under favorable conditions the cost of a house with poured concrete walls may be less than the cost of a well constructed frame house.

The labor saving and durable steel form, therefore, removes the chief obstacle that has been in the way of the more general adoption of the small reinforced concrete house. The first cost of a set of steel forms is not great.

The Blaw Steel Construction Company has been manufacturing steel forms for important concrete construction since 1906. We have furnished forms, at the present writing, on over 6,000 contracts in this country. The Blaw System has been used in the construction of such important works as the Panama Canal, Catskill Aqueduct, New York State Barge Canal, New York Subways, as well as the most important private, municipal and governmental improvements built in recent years.

Blaw Steel House Forms consist of panels of steel plates and accessories for connecting these plates together rigidly, so as to form a mold for walls of any desired dimensions, with provision for corners, and for all ordinary details required in house building. Walls constructed with the Blaw System are of absolutely uniform thickness, straight and smooth. It is never necessary to cut or waste any part of the form to secure correct dimensions, consequently there is no waste of form material.

Blaw Forms require less labor to erect and to shift than do any others. The extra work of spacing the forms at the proper distance apart is eliminated in the Blaw System. We use four fasteners only per panel of four square feet—one fastener per square foot of form. Our spacers are between the flanges of the panels and are secured by these same fasteners, so that the spacing is accomplished automatically as the panels are fastened. In all other systems the panels are first erected and assembled, and subsequently spaced, requiring additional labor and care. More labor is required to line up and to space the panels in other systems, after they have been assembled, than is required to set up forms of the Blaw System ready to receive the concrete.

We do not assemble our panels loosely, and later go over and tighten the fasteners. Each fastener is driven tight when it is inserted, which is when the panel is set in position, and it is not touched again until it is removed to take down the panel.

One man can work alone to advantage, erecting or shifting the panels, as there is no operation requiring two men; or as many men as desired may work together or independently, on the same job, without loss of efficiency. This is a great advantage in regulating the working organization, as nobody need wait on somebody else.

The wall is kept in perfect alignment by a system of steel liners, held in place by the same type of fastener as is used to couple the panels together. These liners not only hold the plates in line but clamp them tightly to the spacers so as to secure great stiffness in the assembled form. Our ingenious combination of panels, spacers, liners and fasteners enables us to care for all variations in the dimensions of walls.

We employ fewer kinds of parts than any other system. Our fastener is the simplest and the most efficient, and is adapted to a wider range of use. We need no bolts, no pipes, no wrenches, no wires, no turnbuckles, because our system has eliminated the operations for which these devices are required.

Complete details regarding these forms, and illustrations of work conducted with them, as well as information regarding prices, furnished upon application.

BLAW STEEL CONSTRUCTION COMPANY.

Blaw Patents.

May 5, 1903

August 23, 1904

Sept. 18, 1906

April 23, 1907

May 21, 1907

May 21, 1907

May 21, 1907

May 21, 1907

May 21, 1907

May 21, 1907

May 21, 1907

Nov. 19, 1907

Aug. 31, 1909

Aug. 31, 1909

Jan. 11, 1910

Jan. 11, 1910

Jan. 11, 1910

Aug. 16, 1910

Sept. 27, 1910

Oct. 18, 1910

Oct. 18, 1910

Dec. 20, 1910

Nov. 28, 1911

Other Patents Pending.

The *Blaw*
SYSTEM